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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/875,290	06/07/2001	James L. Richards	1659.0860001	4657

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EXAMINER	
BAYARD, EMMANUEL	
ART UNIT	**PAPER NUMBER**
2631	

DATE MAILED: 10/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/875,290	RICHARDS ET AL.	
	Examiner	Art Unit	
	Emmanuel Bayard	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/7/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 21 is objected to because of the following informalities: In line 12, change "comparator" to ---comparator----. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Uesugi U.S. Patent No 6,038,264.

As per claims 1, 6, Uesugi teaches a receiver for demodulating received impulse radio signals that are modulated according to a one-of-two positions modulation scheme, the receiver comprising: a timing signal generator is the same as the claimed (an adjustable precision timing generator) (see fig.1 element 39 and col.5, lines 37-40) producing a first timing signal (see fig.1 element 31 and col.5, lines 37-40) and a second timing signal (see fig.1 element 32 and col.5, lines 37-40) separated in time from one another by more than ½ the width of impulses of the received impulse radio signal; an first AD converter is the

same as the claimed (a first sampler) (see fig.1 element 24 and col.2, lines 55-58 and col.5, 26-67) triggered to sample the received impulse radio signal in accordance with said first timing signal and to provide a first sampler output; a second AD converter is the same as the claimed (a second sampler) (see fig.1, element 25 and col.2, lines 64-67 and col.5, lines 27, 55) triggered to sample the received impulse radio signal in accordance with said second timing signal and to provide a second sampler output; and a data detector to produce a demodulation (see fig.1 element 35 or 36 and col.2, lines 58-67 and col.5, lines30-67) decision based on the first sampler output and the second sampler output.

As per claims 2, 7 Uesugi inherently includes wherein the received impulse radio signal includes an impulse that is located in one of a first possible position and a second possible position within a time frame of the received impulse radio signal.

As per claims 3, 8 Uesugi inherently includes wherein said first timing signal corresponds to said first possible position and said second timing signal corresponds to said second possible position.

As per claims 4, 9 Uesugi inherently includes wherein said first possible position is separated from said second possible position by a distance that is at least 10 times the width of impulses of the received impulse radio signal, and wherein said first timing signal and said second timing signal are separated in time by said distance.

As per claims 2, 10, Uesugi inherently includes wherein the width of the impulses of the received impulse radio signal are approximately 0.5 nsec and said distance is at least 5.0 nSeC.

As per claims 11, 16 Uesugi teaches a receiver for demodulating a received impulse radio signal that is modulated according to a one-of-N positions modulation scheme, where in is the number of different possible positions where an impulse can be located within each time frame of the impulse radio signal, the receiver comprising: a timing generator to generating N timing signals (see fig.1 element 39) per each time frame of the received impulse radio signal, wherein each of said N timing signals is separated in time by more than1/2 the width of impulses of the received impulse radio signal; one or more AD converters is the same as the claimed (one or more samplers) (see fig.1 elements 23 or 24 or 25 or 26 and col.2, lines 57-67 and col.5, lines 27-67) triggered to sample the received impulse radio signal in accordance with said N timing signals and to provide a first to Nth sampler outputs; and a data detector to produce a demodulation (see fig.1 element 35 or 36 or 37) decisions based on said first to Nth sampler outputs.

As per claims 12, 17 Uesugi inherently includes, wherein the received impulse radio signal includes impulses that are located in one of a first to Nth possible positions within a time frame of the received impulse radio signal.

As per claims 13, 18 Uesugi inherently includes wherein said first to Nth timing signals corresponds said first to said first to Nth possible positions, respectively.

As per claims 14, 19Uesugi inherently includes, wherein each of the N possible positions are separated from one another by at least 10 times the width of impulses of the received impulse radio signal, and wherein said first to Nth timing signal are separated in time by the same distances that said first to Nth possible positions are separated.

As per claim 15, 20 Uesugi inherently includes wherein the width of the impulses of the received impulse radio signal is approximately 0.5 nsec, and wherein each of the N possible positions are separated from one another by at least 5.0 nsec.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 21-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirakata et al U.S. patent No 6,169,751 B1 in view of Hiramatsu et al U.S. patent No 6,456,677 B1.

As per claims 21 and 26, Shirakata et al teaches a receiver for processing a received impulse radio signal that is modulated according to a one-of-N positions modulation scheme, where N is the number of different positions where an impulse can be located within each time frame of the impulse radio signal, the receiver comprising: a timing signal generator is the same as the

claimed (adjustable precision timing generator) (see figs.1, 2 element 108 and col.6, lines 13-25 and col.8, lines 45-49)) to produce N timing signals per time frame of the received impulse radio signal, wherein each of said N timing signals is separated in time from one another by more than 1/2 the width of impulses of the received impulse radio signal; a data correlator to sample a the received impulse radio signal in accordance with said N timing signals and to provide a first sampler output through an Nth sampler output (see figs. 1-2 elements 101 and 102 and col.5, lines 16-60); a threshold comparator to compare (see figs. 1-2 elements 103-104 and col.5, lines59-67) each of said first sampler output through said Nth sampler output to a threshold, and to output a threshold trigger signal when said threshold is exceeded (see fig.1 element 105 and col.6, lines 1-10); a data sample and hold (S/H) to sample (see fig.1 element 110 and col.7, lines 5-20)at least one of said first sampler output through said Nth sampler output in response to said threshold trigger signal, and to output at least one corresponding sample value that exceeds said threshold.

However Shirakata et al does not teach a counter to increment a count value in response to receiving each of said N timing outputs, and to reset every N timing outputs; a latch to store said count value in response to said threshold trigger signal; and a data detector to produce a demodulation decision based on at least said count value received from said latch and said corresponding sample value.

Hiramatsu et al teaches a counter to increment a count value in response to receiving each of said N timing outputs (see col.14, lines 4-10, 38-67

0, and to reset every N timing outputs (see fig.11 and col.18, lines 10-12); a latch (see col.14, lines 8-10, 19, 56-63 and col.15, line7) to store said count value in response to said threshold trigger signal; and a data detector to produce a demodulation (see figs.9 and 17 elements 806, 1705 and col.16, line 43-60 and col.24, lines 56-67) decision based on at least said count value received from said latch and said corresponding sample value.

It would have been obvious to one of ordinary skill in the art to implement the teaching of Hiramatsu into Shirakata as a desired correct synchronization position could be detected my making timing correction on the basis of the indication signal even if there is delay in the circuits as taught by Hiramatsu (see col.4, lines 65-67 and col.16, lines 60-63).

As per claims 22 and 27, Hiramatsu teaches detecting frame synchronization position of each receive signals (see col.6, lines 25-37). Furthermore implementing such teaching into Shirakata to perform wherein the received impulse radio signal includes an impulse that is located in one of a first to Nth possible positions within a time frame of the received impulse radio signal would have been obvious to one of ordinary skill in the art to implement the teaching of Hiramatsu into Shirakata as a desired correct synchronization position could be detected my making timing correction on the basis of the indication signal even if there is delay in the circuits as taught by Hiramatsu (see col.4, lines 65-67 and col.16, lines 60-63).

As per claims 23 and 28, Hiramatsu teaches detecting frame synchronization position of each receive signals (see col.6, lines 25-37).

Furthermore implementing such teaching into Shirakata to perform wherein said first to Nth timing signals corresponds said first to Nth possible positions, respectively would have been obvious to one of ordinary skill in the art to implement the teaching of Hiramatsu into Shirakata as a desired correct synchronization position could be detected my making timing correction on the basis of the indication signal even if there is delay in the circuits as taught by Hiramatsu (see col.4, lines 65-67 and col.16, lines 60-63).

As per claims 24 and 29, Hiramatsu teaches detecting frame synchronization position of each receive signals (see col.6, lines 25-37). Furthermore implementing such teaching into Shirakata to perform wherein each of the N possible positions are separated from one another by at least 10 times the width of impulses of the received impulse radio signal, and wherein said first to Nth timing signal are separated in time by the same distances that said first to Nth possible positions are separated as a desired correct synchronization position could be detected my making timing correction on the basis of the indication signal even if there is delay in the circuits as taught by Hiramatsu (see col.4, lines 65-67 and col.16, lines 60-63).

As per claims 25 and 30, Hiramatsu teaches detecting frame synchronization position of each receive signals (see col.6, lines 25-37). Furthermore implementing such teaching into Shirakata to perform wherein the width of the impulses of the received impulse radio signal are approximately 0.5 nsec, and wherein each of the N possible positions are separated from one another by at least 5.0 nsec as a desired correct synchronization position could

be detected my making timing correction on the basis of the indication signal even if there is delay in the circuits as taught by Hiramatsu (see col.4, lines 65-67 and col.16, lines 60-63).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 31–35 are rejected under 35 U.S.C. 102(e) as being anticipated by Sudo U.S. patent no 6,647,025 B1 .

As per claim 31, Sudo teaches a method for making demodulation decisions based on a received impulse radio signal that has been modulated according to a one-of-N positions modulation scheme, where N is the number of possible positions where an impulse can be located within each time frame of the impulse radio signal, comprising the steps of: receiving a plurality of training frames of an impulse radio signal wherein the position of an impulse within each frame is known (see abstract and col3, lines 51-60 and col.4, lines 45-49 and col.5, lines 7-15); an A/D is the same as the claimed (sampling) since it well known in the art as to perform sampling function (see fig.8 element 401) each training frame at the position within each time frame (see fig.8 element FFT 414

and col.7, lines 25-35) where the impulse is known to be located to produce training impulse samples; an A/D is the same as the claimed (sampling) since it well known in the art as to perform sampling function (see fig.8 element 402 and col.7, lines 25-35) each position within each training frame that is later in time than the position where the impulse is known to be located to produce training downstream samples; receiving additional frames of an impulse radio signal is inherently include in Sudo; and producing a demodulation decision based on said additional frames and said training downstream samples (see fig.8 element 417 and col.8, lines 25-26).

As per claim 32, Sudo inherently teach the steps of: sampling each of the additional frames at each of the possible N positions where an impulse can be located to produce data samples; and producing the demodulation decision based on at least said data samples and said training downstream samples.

As per claim 33, Sudo inherently teach producing the demodulation decisions based also on the training impulse samples.

As per claim 34, Sudo inherently teach receiving X fames where the impulse is located in a first of the N positions, X frames wherein the impulse is located in a second of the N positions ... and X frames where the impulse is located in the Nth-l position of the N positions.

As per claim 35, Sudo inherently teach producing the training impulse sample values by sampling the first position in the X frames where the position of the impulse is located at the first position, sampling the second position in the X frames where the position of the impulse is located at the

second position; and sampling the Nth-l position in the X frames wherein the position of the impulse is located at the Nth-l position.

As per claim 36, Sudo inherently teach producing the downstream samples by sampling the second through Nth positions in the X frames where the impulse is located at the first position, sampling the third through Nth positions in the X frames where the impulse is located at the second position; and sampling the Nth position in the X frames where the impulse is located at the Nth- 1 position.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tsumura U.S. Patent No 6,754,257 B1 teaches frame timing.

Karin U.S. patent No 6,631,143 B1 teaches a methods and apparatus for frame synchronization.

Takao et al U.S. patent No 5,920,220 teaches clock recovery methods.

Davidocivi et al U.S. patent No 6,154,483 teaches a coherent detection using matched filter.

Hiramatsu et al U.S. patent No 6,289,064 B1 teaches a synchronization equipment.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 571 272 3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Emmanuel Bayard
Primary Examiner
Art Unit 2631

October 23, 2004

EMMANUEL BAYARD
PRIMARY EXAMINER